Claims:

1. A device, comprising:

a scheduler in an access point to provide a schedule of variable length packets based on transmission times to send on spatial channels to mobile stations.

2. The device of claim 1 further including adaptive antenna arrays used in conjunction with a beam forming algorithm to achieve spatial diversity and implement Spatial-Division Multiple-Access (SDMA), wherein the adaptive antenna array changes beam weights based on the schedule.

3. The device of claim 1 wherein the scheduler in the downlink provides the schedule of transmission intervals for different mobile stations.

4. The device of claim 1 wherein the schedule accounts for traffic information to the mobile stations based on packet size.

5. The device of claim 1 wherein the schedule accounts for traffic information to the mobile stations based on queue size.

6. The device of claim 1 wherein the schedule accounts for traffic information to the mobile stations based on priority.

7. The device of claim 1 wherein the access point sends multiple schedules in a protected time interval to the mobile stations.

8. The device of claim 7 wherein a first schedule of the multiple schedules is sent to a first mobile station and a second schedule is sent to a second mobile station.

9. The device of claim 1 wherein the access point fills spatial channels using the data packets buffered for all the mobile stations.

10. A device, comprising:

a scheduler in an access point to receive traffic information from at least one mobile station in an uplink, where the traffic information is used to schedule packets to the at least one mobile station in a downlink.

11. The device of claim 10, wherein the scheduler in the access point provides scheduled, variable length packets on spatial channels to the at least one mobile station.

12. The device of claim 10, wherein the access point polls to acquire packet size information from the at least one mobile station.

13. The device of claim 10, wherein the access point polls to acquire queue size information from the at least one mobile station.

14. The device of claim 10, wherein the access point polls to acquire priority information from the at least one mobile station.

15. The device of claim 10, wherein the access point receives piggy-back feedback to acquire packet size information from the at least one mobile station.

16. The device of claim 10, wherein the access point receives piggy-back feedback to acquire queue size information from the at least one mobile station.

17. The device of claim 10, wherein the access point receives piggy-back feedback to acquire priority information from the at least one mobile station.

18. The device of claim 10 wherein the access point sends an acknowledgement of an uplink data packet to the at least one mobile station in a normal downlink packet.

19. A system, comprising:

mobile stations in a network; and

an access point having a scheduler to add code bits to a data packet to send on spatial channels to at least one mobile station.

20. The system of claim 19 further including a code rate adjuster to add a code rate adjustment to at least one data packet within a protected interval of a data packet transmission.

21. The system of claim 19 wherein the code rate adjuster changes a code rate of Forward Error-Correction (FEC) codes in the data packet to fill space-time channels.

22. The system of claim 19 wherein the access point provides a packet to hold a medium for a certain duration and the scheduler controls communication traffic on two spatial channels by not placing the data packets for the at least one mobile station into the two spatial channels at the same time.

23. A Wireless Local Area Network (WLAN), comprising:

mobile stations; and

an access point to incorporate fragmentation to at least one data packet within a protected interval to send to at least one mobile station.

24. The WLAN of claim 23, further including a fragmentor unit in the at least one mobile station to use fragmentation to fill space-time channels in a downlink transmission to the access point.

25. The WLAN of claim 23 wherein the access point fills channels of data packets next to each other and fragments at least one data packet within the protected interval.

26. A method for a Medium Access Control (MAC) protocol, comprising:

scheduling variable length packets in an access point based on transmission times to send on spatial channels to mobile stations.

27. The method of claim 26, further including:

retrieving antenna resources in the access point to form spatial channels developed on the fly for a waiting mobile station.

28. The method of claim 26, further including:

fragmenting at least one data packet within a protected interval to send to at least one of the mobile stations.

29. The method of claim 26, further including:

using a code rate adjustment to change code rates of Forward Error-Correction (FEC) codes in at least one of the variable length packets to fill the spatial channels.